

## ***Staff Draft***

# **Pilot Performance-Based Incentive Program Proposal**

This paper details a “straw man” proposal for a pilot performance based incentive (PBI) program to be implemented as part of the Emerging Renewables Program (ERP). Ten million dollars has been set aside for this purpose and is available for incentive payments under the pilot. The focus of the pilot is to answer a number of questions regarding market response to a PBI program. Early program participation will provide insight for policy makers to determine if a long term PBI program should be put in place and how a long term program could best be implemented.

The goal of the ERP is to implement the pilot PBI program in January 2005. The staff workshop is scheduled for September 27, 2004 to discuss this proposal and to consider comments and ideas on how to implement a pilot program. The California Energy Commission has raised a number of questions in the Integrated Energy Policy Report regarding the future of ERP and possible performance-based incentives. After the staff workshop, a revised version of the staff proposal is planned to be made available for another opportunity to comment at a Committee workshop after which guideline changes to the ERP will be made and considered for adoption by the full Commission.

### **I. Overview of Issues Affecting a Pilot Performance Based Program**

Because this program is new to California and is only a pilot, the program design should be simple and straight forward. The results from the program can be used to further refine a long term PBI program if it is determined that this approach is the best way to meet the goal of developing the market and accelerating system cost reductions for photovoltaics so that incentives are no longer needed. Furthermore, the amount of funding available for this pilot is \$10,000,000 which is a relatively small amount in the context of the unprecedented demand in California for incentive funds. The proposed pilot PBI program is expected to run concurrent to other incentives currently being offered through the Self Generation Incentive Program (SGIP) and the ERP. At this time, limited funding with high demand in both programs creates additional uncertainty as to how participation in the pilot PBI may be affected. Also, the CPUC has proposed lowering the incentive level offered by the SGIP and is expected to issue a decision later this year. It may be difficult to reach conclusions from the results of the pilot PBI due to complications resulting from overlapping funding with existing rebate programs and the likelihood that funding will not be available to some customers at different times. These issues clearly affect the program design and the value of the results. The key at this time is to develop a final pilot program design using the best methodology and approach with currently available information.

## II. System Size Limits

Staff is proposing to limit participation in the pilot program to systems rated less than 200 kW<sub>(CEC)</sub>. An upper limit on system size assures there is a minimum number of systems installed to make meaningful conclusions. The number of participants would likely range somewhere between 20 to about 200. A 200 kW limit is also consistent with the limits specified in the state tax credit. Staff is not proposing a lower limit on system size. This would allow residential and small commercial customers to participate if they so chose. However, the cost of the data acquisition (\$1000 to \$6000) system may discourage participation from potential applicants with very small systems because the data acquisition system could represent a relatively large percent of the total PV system cost. The following table provides other alternatives that were considered.

*Staff Recommendation: 200 kW system size limit*

Other Alternatives Considered		Pro or Con
A.	No size limit	Pro: Opens the program to all – see what size systems participate Con: Small number of very large systems could use most of the funds and little may be learned
B.	Limit funds per project to \$100,000	Pro: Assures that at least 100 projects could participate Con: Would exclude larger projects
C.	Limit pilot PBI system size from 10 to 30kW and change ERP rebate size limit to 10kW	Pro: Eliminates overlap between current rebate programs (SGIP and ERP) and PBI Pilot Con: Creates funding gaps or complexities in funding additions to existing systems that increase the system size from less than 10kW to greater than 10 kW

## III. Single Incentive Level for All Customer Classes

Staff proposes that a single incentive level be offered for all customer classes. It is clear that different customer classes such as commercial, residential, and non-profits have different economic factors that may affect a decision to purchase a PV system or to participate in the pilot PBI program; however, current rebates are offered at a single level for a variety of customer classes and appears to work well and is less complicated. In this pilot program, there is also no need to try to make PV systems economic for all potential PV system customers because the PV market and incentives available could only support a very small number of systems relative to the number of potential buyers.

The program incentive and design will be most effective if the balance is found where the minimum incentive is paid to encourage the maximum number of kilowatt hours produced. Relative to existing incentives offered, commercial customers are likely to

benefit the most from a PBI because existing federal and state tax credits are based on the full cost of the system instead of the net cost after rebate. Residential applicants will realize a small benefit from the state tax credit alone and non-profit organizations will not realize any tax benefit. A single incentive level is the simplest approach and has the advantage, from a pilot test perspective, of allowing some comparison of customer class participation relative to participation in existing rebate programs.

*Staff Recommendation: Single incentive level for all classes*

Other Alternatives Considered		Pro or Con
A.	Provide different incentives for Commercial vs Residential Customers	Con: Additional complexity, may be difficult to verify proper class type, increases difficulty in determining meaning of results, less kWh produced for same program funds. Pro: Better addresses the economic needs of each customer class
B.	Provide different incentives by tax category of customer (non taxed public entity, taxable entity)	Pros: Levels out net after tax costs for each customer class Con: Would be difficult to verify proper class type, increases difficulty in determining meaning of results

#### IV. Incentive and Payments

Staff proposes that the incentive payment be set at \$0.25 per kWh and be paid annually over a 5 year period with the first payment made after the first year of operation. For customers with the ability to take advantage of the federal and state tax credits, this incentive is equivalent on a net present value comparison to the \$2.80 per Watt rebate expected to be offered in the ERP starting January 2005. The comparison assumes a properly operating fixed tilt system with typical energy production. An applicant with a system that performs better than the typical system or with a more favorable tax situation will receive a higher economic incentive with the proposed PBI than with the ERP rebate. Also, systems with trackers presumably will perform considerably better than a fixed system (used in calculation) and would also benefit further from the PBI relative to an upfront rebate. A five year period is sufficient to account for variations from year to year and may be short enough such that uncertainty about future payments is relatively small. A ten to 20 year period for incentive payments is too long for a pilot program; however, it may be preferred for a long term PBI program.

Demand for PV funds from the ERP continues to be so high that it is not appropriate to establish an incentive that exceeds the incentives offered through either the SGIP or the ERP. The following table shows demand for ERP program funds over the last several years.

**Demand for ERP Program Funds**  
**Systems Ranging from 10 to 30 kW compared to All Systems Less than 30 kW**

Period	Systems <30 kW		Systems > 10 kW and <30 kW		Percent of Total		Rebate Level (\$/watt)
	Number	kW	Number	kW	Number	kW	
Q1/Q2 2001	1,624	4,942	14	234	1%	5%	\$ 2.50
Q3/Q4 2001	1811	6360	53	892	3%	14%	\$ 4.50
Q1/Q2 2002	1474	5277	12	200	1%	4%	\$ 4.50
Q3/Q4 2002	2,075	7,910	75	1,071	4%	14%	\$ 4.50
Q1/Q2 2003	4,309	17,686	226	3,610	5%	20%	\$ 4.00
Q3/Q4 2003	4,603	20,002	282	4,508	6%	23%	\$ 3.80
Q1/Q2 2004	3,547	17,792	306	5,024	9%	28%	\$ 3.20
<b>Totals</b>	<b>19,445</b>	<b>89,896</b>	<b>968</b>	<b>15,540</b>	<b>5%</b>	<b>19%</b>	

In the last year and a half, about 4000 applications were received requesting about \$50 million in rebates every 6 months. This equates to over \$100 million per year. Also note that as rebates have declined the demand from the commercial sector (primarily systems larger than 10 kW) has continued to rise as demand for smaller systems has leveled off.

*Staff Recommendation: Incentive of \$0.25/kWh, paid over 5 year period*

Other Alternatives Considered		Pro or Con
A.	Make single payment after 1 year	Pro: Simplifies payments Con: Problems with PV or metering system in first year may underpay applicant.
B.	Make payments for 10 or more years	Pro: More accurate to assess long-term performance Con: Period is too lengthy, especially for a pilot program
C.	Set incentive higher than ERP rebate	Pro: Higher incentive may encourage high participation rates. Con: Would not be as cost effective. Would not answer question if PBI could provide incentives for more systems with same funds and would likely reduce number of systems installed.

## V. Data Collection and Reporting

System performance data in kWh can be reported by one of two ways. System performance can be measured and reported by the electric utility with a separate

revenue grade meter or with a web based data acquisition system. A number of the utility providers are open to installing meters and reading system output, however a number of issues and details will need to be addressed before this option can become viable. With web based systems, the Energy Commission can either list eligible measurement systems or will review and approve each system for each site. Once operational the Energy Commission will require full access to the web site to monitor the system performance and to verify energy production for incentive payments. The cost of operating and installing the data acquisition system will be paid by the applicant as part of the system price. Once the PV system becomes fully operational, the applicant will provide the Energy Commission with the appropriate information to verify the first reading and start date. Payments will be made annually after verification of the system performance.

*Staff Recommendation: System performance verified using web-based data acquisition system or utility reporting*

Other Alternatives Considered		Pro or Con
A.	Allow customer to self report kWh	Pro: Customer will become more aware of system performance Con: Actual performance may not be accurately reported and will need to be field verified
B.	Have consultant physically read performance meter for every system each year	Pro: Confidence that system performance is reported accurately. Con: Existing technical support contract already limited, consultant costs could be prohibitive

## VI. Application Process and Reservation Period

Because of the limited funding available, an initial reservation period is needed to assure funds are available for making the PBI payments. The reservation application process will be similar to that used for the existing ERP. A funding reservation prior to the PV system being installed assures the applicant that funding will be available if the project is completed within the reservation period, and assures that funding is only reserved for applicants that have made a commitment to install a given system.

*Staff Recommendation: Similar reservation process to ERP*

Other Alternatives Considered		Pro or Con
A	Grant reservation solely with signed application form agreeing to purchase and install system, approved permit to install, and utility bill.	Pro: Simplifies application review process and time to review applications. Con: May increase likelihood funding is reserved for projects that are not installed or are not eligible

Other Alternatives Considered		Pro or Con
B.	Have no reservation period	Pro: Simplifies program administration Con: Potential applicant may not be willing to risk installing a system if funding not secured
C.	No reservation, but allow applicants with reservations in the ERP or Self-Generation Incentive Program to switch to PBI if available at the time	Con: Could create significant lag in determining the demand for funds in the PBI. Same risk as above if there is gap in funding in other programs.
D.	Offer kWh incentive through a bid solicitation process	Pro: Solicitation could yield early market participation results and information on preferred incentive level. Competition may drive down the cost of incentive payments. Con: Adds uncertainty for applicants who are not familiar with bid process and making system sales. Ability to secure rebates from existing programs may result in inflated bids. More difficult to compare with participation in existing programs.

## VII. Evaluation of Pilot

Part of the purpose of the PBI pilot is to help the Energy Commission determine the best incentive approach to build a sustainable PV market. The pilot program will help answer the following questions:

- 1) What are the advantages and disadvantages of a performance-based incentive relative to an upfront rebate?
- 2) What is the proper incentive payment?
- 3) Will stakeholders participate in a performance-based incentive program?
- 4) Will the upfront costs for PV be a barrier to participation on a PBI program?
- 5) Will new financing options be made available and will leases or third party ownership become more likely?
- 6) Will a performance-based incentive program result in better performing PV systems?
- 7) Does a PBI program work better for the commercial sector? Projects of a certain size? Are their tax advantages for other sectors?
- 8) Will a performance-based incentive result in the installation of more PV per dollar invested versus an upfront rebate?

In the near-term, we anticipate gaining insight into many of these questions by looking at the participation in the pilot program. In the long term, we should gain insight regarding questions about system performance and creative financing options.

## **VIII. Comments Received**

Accelerated Renewable Energy Development Draft Staff White Paper (Docket No. 03-IEP-01) 2004 Integrated Energy Policy Report Update. Comments on performance-based incentives received from the following:

- The Rarus Institute
- Semptra Energy Utilities
- Coalition for Responsible and Ethical Environmental Decisions (CREED)
- GenSelf

## **IX. Documents Reviewed**

1. CALSEIA / Bonneville Environmental Foundation, "Performance-Based Incentives: The Principle," Presentation made to the California Energy Commission, Spring 2004.
2. Thomas Starrs, "Designing a Performance-Based Incentive for Photovoltaic Markets," presented at the American Solar Energy Society's Solar 2004 Conference, July 2004.
3. Thomas Hoff / Robert Margolis. Draft, "Economic Benefits of Performance-based Incentives," July 9, 2004.